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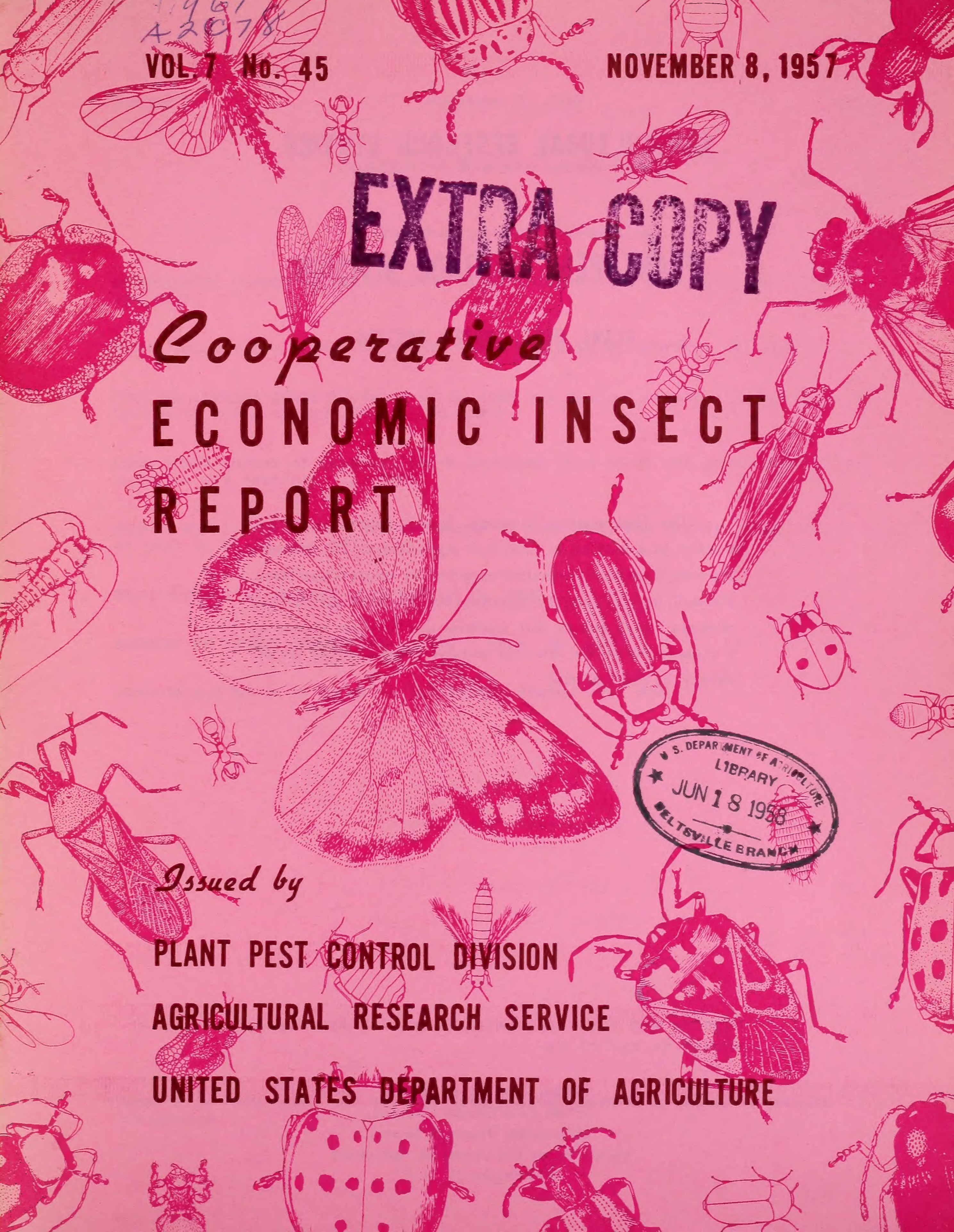

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Cooperative ECONOMIC INSECT REPORT

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Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
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AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

PLANT PEST SURVEY SECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Pest Survey Section
Plant Pest Control Division
Agricultural Research Service
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Volume 7 November 8, 1957 Number 45

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

GRASSHOPPER damage to small grains light to severe in some Oklahoma counties. (p. 859).

First established record of RHODES-GRASS SCALE in California. (p. 859).

SPOTTED ALFALFA APHID building up in some New Mexico counties; numerous in many fields in north central Kansas. (p. 860).

CORN BORER survey in Arkansas shows European corn borer and southwestern corn borer in new counties. (p. 860).

PEPPER WEEVIL has caused severe damage in Vineland, New Jersey, area. First report of pest in State. (p. 861).

Distribution of JEFFREY PINE BEETLE (p. 864).

SUMMARY OF INSECT CONDITIONS - 1957 - Utah. (p. 865).

Insects not known to occur in the United States. (p. 869).

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Reports in this issue are for the week ending November 1 unless otherwise designated.

WEATHER OF THE WEEK ENDING NOVEMBER 4

The general circulation pattern associated with this week's weather was one of high pressure in the Northwest and Southeast, and with principal frontal activity and low pressure systems extending from the Southwest to the western Lakes region. However, probably the most outstanding single storm was the off-shore disturbance which came into the picture on Friday, bringing generous rains to the central and northern Atlantic coastal plains. Lasting from the 1st through the 3d, this was the first extended storm period observed in southern and eastern New England since April. A 2.75-inch total recorded at Boston, Mass., was the heaviest single storm amount of this year at that location, and exceeded individual monthly totals since May.

In contrast to last week, the precipitation picture was perhaps more significant than that of the temperature. Weekly totals in southern California and eastward into New Mexico, and from this section northward into portions of Utah, Colorado, Wyoming, and Montana, exceeded ½ inch. Yuma, Ariz., observed over 2 inches, and the 4 inches reported for the week at Flagstaff, in the same State, is a greater amount than the combined October and November normals indicate for the station. Precipitation accumulations for the week were also moderate to heavy throughout Minnesota and adjacent southeastern North Dakota, eastern South Dakota and northwestern Iowa, as well as in the Atlantic coastal areas previously mentioned. Parts of the country without measurable falls this week include the Florida Peninsula, Gulf sections of Texas, northern California, and eastern Oregon.

Heaviest snowfalls so far this season were reported at locations in the central and northern Rocky Mountain and Plateau States. Up to 2 feet fell in mountain sections of Utah, and at Lander, Wyo., 16 inches of snow was measured on the ground on Monday morning. Considerable snow was reported in the southern high Sierras of California on the 2d, but decreasing northward to 2 inches at Soda Springs; while on the mountains near Los Angeles, 6 inches of snow was observed at elevations above 7,000 feet.

Warm temperature conditions prevailed in the northern Rocky and northern and central Plains States early, with a cooling trend toward the end of the period. This was also the pattern in California, while in the central Plateau States and in the Southeast the picture was reversed. Above-normal temperatures were generally observed in the Great Lakes region and northeast where averages for the week were +5° in northern Michigan and Wisconsin and +7° in Maine. Weekly averages were also above normal in southwestern California, southwestern Texas, in extreme northern sections of the Canadian Border States of the west, and in an area incorporating northeastern Arizona, northern New Mexico, eastern Utah, south-central Wyoming, most of Colorado, and western Kansas. Elsewhere, they averaged below normal, with -6° to -8° anomalies common to most of Florida. (Summary supplied by U. S. Weather Bureau).

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WEATHER BUREAU 30-DAY OUTLOOK

NOVEMBER 1957

The Weather Bureau's 30-day outlook for November calls for temperatures to average below seasonal normals over the southern half of the nation except for near to above normal over the far Southwest. Near normal temperatures are expected over northern portions except for above normal over the Northeast. Precipitation is expected to exceed normal over the Northeast and also over the Great Plains. Subnormal precipitation is predicted west of the Continental Divide and in the extreme Southeast. In unspecified areas near normal amounts are indicated. (Weather forecast given here is based on the official 30-day "Resume and Outlook", published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year."

CEREAL AND FORAGE INSECTS

GRASSHOPPERS - UTAH - Remain numerous and active on rangelands in Strawberry Valley of northern area. (Knowlton, Oct. 26). CALIFORNIA - Early October rains in Sacramento-San Joaquin Valley indicate probability of larger number of Melanoplus devastator eggs being deposited than had been anticipated. (Cal. Coop. Rept.). OKLAHOMA - Fall populations of 3-14 adults per square yard in panhandle counties, higher numbers in field margins and areas where M. bilituratus were migrating. Heavy flights of latter in Beaver, Texas and Cimmaron Counties. Damage to small grains light to severe, heavy re-planting necessary most field margins. Field margin vegetation averaged 4-8 good egg pods per square foot (light-threatening classification). Rangeland surveys showed light-severe classification. Parasites and predators destroyed approximately 17 percent of egg pods (October 21-24). (Fed.-State Grasshopper Control Program). Heavy migration of M. bilituratus in western Harper and eastern Beaver Counties, October 29-30, moving southwest. Most females gravid. Populations in "resting area" generally 10-20 adults per square yard compared to 2-5 per square yard for summer in same area. Mating common, egg-laying continuing throughout panhandle counties. (Coppock, Goin).

EUROPEAN CORN BORER (Pyrausta nubilalis) - SOUTH DAKOTA - Infestation in 8 north central counties averaged 66 percent with 172 borers per 100 plants. Infestation in 9 central counties averaged 84 percent with 414 borers per 100 plants.(Hantsbarger). OKLAHOMA - One larva found in 150 corn plants at Stillwater,October 31. (Arbuthnot).

FALL ARMYWORM (Laphygma frugiperda) - KANSAS - Activity in north central area terminated by freeze of October 25. Heavy infestations and previous stalk and shank feeding caused a high percentage of ear drop and stalk lodging in Washington, Republic, Jewell, Mitchell and Cloud Counties. Some fields showed 40 to 60 percent shank feeding damage and averaged 20 percent ear drop. (Matthew). TEXAS - Destroyed 15 acres of 300 acre field of winter oats in Van Zandt County. (Hawkins). OKLAHOMA - Freezing weather killed over 95 percent of larvae in corn plants at Stillwater, October 25-26. (Arbuthnot). Occasional to very light in scattered wheat fields, Alfalfa and Woods Counties. (Coppock, Goin).

FALSE WIREWORMS - OKLAHOMA - Light damage to wheat, localized areas, Texas County. (Owens).

RHODES-GRASS SCALE (Antonina graminis) - CALIFORNIA - Heavy infestation on St. Augustine grass on one property in El Centro, Imperial County. This first established record for State made on October 13, 1957. Infestation currently being investigated from an eradicative standpoint. Det. H. Morrison and H. L. McKenzie. (Cal. Coop. Rep., October 29).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - KANSAS - None found in corn fields in Washington, Republic, Jewell and Mitchell Counties. Previous survey located borers in Cloud County, same general area. (Matthew).

A WHITE GRUB - NEVADA - The Aphodius sp. reported in CEIR 7(27):529 has been identified as Aphodius hamatus garmani by O. L. Cartwright. (Bechtel, Oct 25).

THREE-CORNERED ALFALFA HOPPER (Spissistilus festinus) - NEW MEXICO - Medium to heavy in all alfalfa fields in Dona Ana, Chaves, Eddy and Grant Counties. Many fields have infestations as high as 500 per 100 sweeps. (Durkin).

TARNISHED PLANT BUG (Lygus lineolaris) - KANSAS - Numberous in alfalfa fields in north central areas. Counts from 1-7 per sweep. (Matthew). NEBRASKA - Population decreased somewhat from previous weeks counts of 160 per 100 sweeps to an average of 100 per 100 sweeps in Republican Valley district. (Andersen). OKLAHOMA - Up to 50 per 10 sweeps, one irrigated alfalfa field, Cimmaron County. Lighter elsewhere. (Coppock, Goin).

SOUTHERN GREEN STINK BUG(Nezara viridula) - FLORIDA - Nymphs and adults observed on several thousand acres of soybeans in Dade County. Estimated 15 and 50 bugs per bushel at two locations. (Wolfenbarger, Oct. 29).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Building up in alfalfa in spotty infestation in Chaves, Eddy and Dona Ana Counties. Most infestations light to medium; 75 percent being winged. (Durkin). KANSAS - Quite numerous in many alfalfa fields throughout north central area. Particularly heavy infestations in fields in Republic, Jewell, Mitchell and Cloud Counties with counts ranging from 35 to 750 per sweep. One field of seedling alfalfa in Jewell County had population as high as 100 aphids per square inch when the aphids were brushed to the ground. Although alfalfa in area has wilted from first freeze, fields containing heavy infestations could be readily noted by difference in plant discoloration. Predator populations were light in infested fields. (Matthew). NEBRASKA - Population decreasing in Republican Valley. Counts average 220 per 100 sweeps. (Andersen).

CORN BORER SURVEY IN ARKANSAS: Ninety-six fields in 30 counties surveyed. Fifty-three infested with European corn borer (Pyrausta nubilalis) with heaviest infestations in northeast area. Marion and Izard Counties found infested for the first time, making 13 new counties for State this year. Insect has now been recorded in 50 of 75 Arkansas counties; non-infested counties constitute southwestern one-third of State. Percentage of stalks infested and number of borers per stalk increased over 1956. Thirty-three of the 96 fields were infested with southwestern corn borer (Zeadiatraea grandiosella). Infestations heavier in general in western than eastern counties. This species was found for first time in Arkansas, Independence and Izard Counties, making 14 new counties infested during 1957. Forty-nine of the 75 counties now known infested. (Boyer).

POTATO LEAFHOPPER (Empoasca fabae) - KANSAS - Collected in alfalfa fields in Cloud, Republic, Jewell and Mitchell Counties. Counts ranged from 20 to 150 per 25 sweeps. (Matthew). OKLAHOMA - From 2-4 adults per 10 sweeps, one alfalfa field, Woods County. (Coppock, Goin).

PEA APHID (Macrosiphum pisi) - NEW MEXICO - Generally very light in alfalfa in Dona Ana, Grant, Chaves and Eddy Counties. (Durkin). NEBRASKA - Population continues to decrease in Republican Valley area. Counts average 160 per 100 sweeps. (Andersen). OKLAHOMA - In Ellis County, 3-10 per 10 sweeps, one field. First report in several months from northwestern counties. (Coppock, Goin).

MEADOW SPITTLEBUG (Philaenus leucophthalmus) - DELAWARE - Recent egg survey, involving 5 alfalfa fields in each county, indicates the abundance in New Castle County is nearly 4 times that in Kent County (55 eggs compared to 14 per 100 plants), and that the count in Sussex County averages less than 2 per 100 plants. The proportion of adults in each county during late summer and early fall was greatest in the northern third of the State and diminished progressively southward. Adults are uncommon at present generally. (Conrad).

CLOVER ROOT CURCULIO (Sitona hispidula) - DELAWARE - Usual adult population responsible for noticeable foliage injury to new alfalfa growth, following late cuttings, throughout State. (Milliron, Conrad).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Averaged 2.5 larvae per 10 sweeps, one alfalfa field, Harper County. (Coppock, Goin).

ALFALFA WEEVIL (Hypera postica) - DELAWARE - Adults continue active generally. Second-generation larvae scarce in all fields throughout State. (Milliron, Conrad).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - NEBRASKA - Populations decreasing. Counts average 40 per 100 sweeps in Republican Valley. (Andersen).

APHIDS - SOUTH CAROLINA - Building up on early planted oats in Barnwell County. (Nettles et al.). OKLAHOMA - Rhopalosiphum fitchii occasional to very light, few fields of small grains, Alfalfa County. Macrosiphum granarium 0-5 per linear foot of row, small grains in northwest and panhandle. The heavier populations in volunteer oats and wheat. (Coppock, Goin).

A WHITE-FRINGED BEETLE (Graphognathus peregrinus). LOUISIANA - Considerable numbers present in white clover field at Crowley, Acadia Parish. Det. R. E. Warner. First record for parish. (Oliver, Oct. 11).

FRUIT INSECTS

A CATERPILLAR (Datana sp.) - TEXAS - Feeding on pecan leaves in Karnes County. (Turney).

A WALNUT MAGGOT (Rhagoletis sauvis) - PENNSYLVANIA - Fifteen percent infestation in 6 large English walnut trees in Snyder County, September 27. Det. R. H. Foote. (Gesell, Pepper).

A TORTRICID - NEW MEXICO - Larvae causing moderate damage to late varieties of apples in orchards in Albuquerque area of Bernalillo County. (Durkin).

TRUCK CROP INSECTS

PEPPER WEEVIL (Anthonomus eugenii) - NEW JERSEY - Severe damage inflicted on pepper plantings in the Vineland area of southern New Jersey. This area includes parts of Gloucester, Atlantic and Cumberland Counties since it is located at the geographical junction of those districts. It is not known yet whether the infestation if of more than one year's duration. Det. R. E. Warner. (Merrill, Oct. 23). This is the first record from the State.

MUSHROOM PESTS - NEVADA - A humpbacked fly (Megaselia sp.) and fungus gnats (Lycoria sp.) are increasing to economic level in mushroom house in Reno, Washoe County. (Bechtel, Oct. 25).

CUCUMBER BEETLES - DELAWARE - Acalymma vittata and Diabrotica undecimpunctata howardi continue to be prevalent on pumpkin-squash, generally. Latter species also active on spinach and beets, southwestern Kent County and on turnips one location in central Sussex County. (Milliron, Conrad).

ASPARAGUS MINER (Melanagromyza simplex) - DELAWARE - Responsible for heavy injury several places in New Castle and Kent Counties. Injury ranges from light to moderately heavy most locations in Sussex County. (Milliron, Conrad).

APHIDS - DELAWARE - Brevicoryne brassicae is injurious on commercial cauliflower in central Kent County and Rhopalosiphum pseudobrassicae is common on turnip foliage locally in Kent and Sussex Counties. (Milliron, Conrad).

SOUTHERN CABBAGEWORM (Pieris protodice) - DELAWARE - Attacking commercial mustard and turnips, some locations in Kent County. (Milliron, Conrad).

COTTON INSECTS

COTTON APHID (Aphis gossypii) - NEW MEXICO - Light to medium and spotty in cotton in Dona Ana County. (Durkin).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Surveys continue. Inspection intensifying with number of gins operating on seasonal increase. Over 10,000 green cotton bolls inspected in San Joaquin Valley. Inspections to date negative. (Cal. Coop. Rept.). NEW MEXICO - One heavy infestation found about 20 miles north of control area in southern Dona Ana County. About 65 to 70 percent of bolls infested. (Durkin). OKLAHOMA - Gin trash, green boll, dry boll, lint cleaner and gin stand inspections indicate very light infestation.

Positive finds reported from Bryan, Beckham, Caddo, Comanche, Harmon, Jackson, Love and Tillman Counties. (Fed. - State PBW Project).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

PALES WEEVIL (*Hylobius pales*)-ALABAMA - Found in scarce numbers in pine trees in Lee County. (Grimes).

BLACK TURPENTINE BEETLE - (*Dendroctonus terebrans*) - ALABAMA - Large numbers in pine stumps, Lee County. (Grimes).

IPS BEETLES (*Ips*. sp.) - ALABAMA - Large number of *I. grandicollis*, *I avulsus* and *I. calligraphus* infesting pine stumps and logs from recently cut timber in Lee County. (Grimes).

DEODAR WEEVIL (*Pissodes nemorensis*) - ALABAMA - Present in fairly large numbers in Lee County. (Grimes).

A WEEVIL (*Pseudocneorhinus bifasciatus*) - PENNSYLVANIA - Feeding on privet and other ornamentals in Philadelphia. (Menusan, Oct. 28).

A MEALYBUG (*Pseudococcus* n. sp.) - CALIFORNIA - Light on *Cattelya* sp. in nursery in San Anselmo, Marin County. (Cal. Coop. Rept.).

DOGWOOD TWIG BORER (*Oberea tripunctata*) - NORTH CAROLINA - Infesting dogwood locally in Pitt County. (Scott, Farrier).

ARMORED SCALES - OKLAHOMA - More have been noted on ornamentals throughout State than in previous years. (Stiles).

STINK BUGS (*Chlorochroa* spp.) - OREGON - Damaging ornamental arborvitae in a Portland nursery October 31. (Nicholiason).

INSECTS AFFECTING MAN AND ANIMALS

BLACK FLIES - UTAH - Annoying to deer hunters in the Wasatch Mountains in several areas. (Knowlton,Oct. 26).

BLACK-LEGGED TICK (*Ixodes ricinus scapularis*) - CONNECTICUT - Taken while engorging on shoulder of eleven-year old boy at Middlefield. Det. Garman and Johnson. (Johnson). Unusual record for State.

BENEFICIAL INSECTS

HONEY BEE (*Apis mellifera*) - CALIFORNIA - Extensive movement of colonies from summer to winter and spring locations in almond orchards. Early rains have created possibility of future impassible conditions in orchards and made early movements advisable. (Cal. Coop. Rept.).

PREDATORS - NEBRASKA - Various predator populations in Republican Valley area per 100 sweeps are as follows: Nabids - 120; lacewings - 80; lady beetles - 100. (Andersen). OKLAHOMA - Numerous in irrigated alfalfa in northeast and panhandle. Twenty to 30 lacewing larvae and adults and 15-25 lady beetles, per 10 sweeps common. Lighter in upland alfalfa. (Coppock, Goin). OREGON - Survey disclosed approximately 20 percent of eggs destroyed by beeflies and other insects in Umatilla, Grant and Wallowa Counties, in late October. Spiders unusually abundant, especially in Wallowa County, capturing large numbers of grasshoppers in webs. (Chinn).

STORED PRODUCTS INSECTS

DRUG-STORE BEETLE (*Stegobium paniceum*) OREGON - Several inquiries concerning control in recent weeks. (Every).

DERMESTIDS - OREGON - More frequent numbers throughout western areas than in previous years. (Every).

KHAPRA BEETLE (*Trogoderma granarium*) - CALIFORNIA - New infestation reported from Holtville, Imperial County. Heavy on sacks of barley. This infestation represents the 314th infestation reported in State since beginning of the program. (Cal. Coop. Rept.).

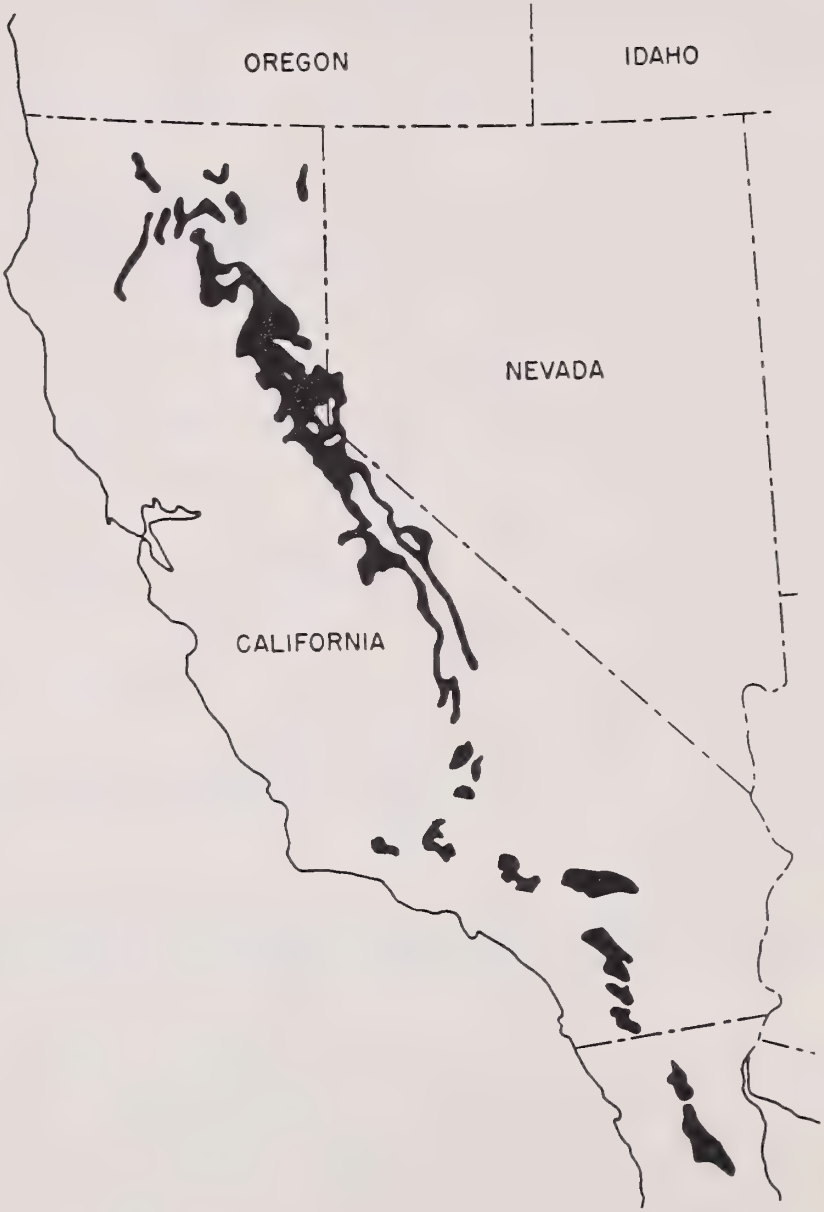
FLOUR BEETLES - NORTH CAROLINA - Severe infestations of *Tribolium castaneum* and *T. confusum* in a rat bait mixture of warfarin in corn meal in Cleveland County. (Jones, Weisman, Oct. 23).

PSOCIDS - SOUTH DAKOTA - Heavy infestation in shelled corn in Brookings County. (Lofgren).

LIGHT TRAP COLLECTIONS

	Pseud.	Agrot.	Prod.	Anticar.	Laphyg.	Hel.	Ala.	Protoparce	
	unip.	yps.	orn.	gemm.	frug.	zea	argil.	sexta	quin
ALABAMA (Counties)									
De Kalb 10/24, 31	30	5		13				16	
Lee 10/26, 29, 31	40	8			8	10	6		
ARKANSAS (Counties)									
Fayetteville 10/19-11/1	535	109				79			
Stuttgart 10/17, 30	2								
KANSAS									
Garden City 10/23 - 29	4	16				108			
Manhattan 10/28 - 31		6				24			
NEBRASKA (Counties)									
Box Butte 10/14 - 23	46	21			1	154			
Lincoln 10/17 - 23	997	169	1		48	126			
Scotts Bluff 10/21 - 27	9	12			2	7			
SOUTH CAROLINA (Counties)									
Charleston 10/21 - 27	16	6	7	182	4	16	479		
Florence 10/26-11/1	38	24	11	96	5	12	864		
Oconee 10/26-11/1	54	2	5		2	3	16		
TENNESSEE (Counties)									
Blount 10/22 - 28	13	2	6		1	38	1		
Johnson 10/22 - 28	75	12	10			14	6		
Knox 10/22, 28	31	10	6		1	24	1		
Madison 10/22 - 28	172	32			8	208	156		
Maury 10/22 - 28	31	4			2	68	24		
Robertson 10/22 - 28	9	9				23			
TEXAS									
Beaumont 10/1-5, 9-11, 14-15	15	90	28						
Brownsville 10/20 - 26	36	75	10		328	116	172	10	3
Waco 10/26-11/1	5					12	1		

DISTRIBUTION OF JEFFREY PINE BEETLE (DENDROCTONUS JEFFREYI)
in North America



SUMMARY OF INSECT CONDITIONS - 1957

UTAH

Reported by G. F. Knowlton, D. W. Davis, H. E. Dorst, H. F. Thornley, H. C. Cox, and County Agricultural Agents

The spotted alfalfa aphid, pea aphid, tomato russet mite, grasshoppers, corn earworm, alfalfa weevil, lygus bugs, army cutworm, yellow-striped armyworms, corn leaf aphid (on barley), spider mites, mosquitoes, raspberry caneborers, cattle lice, and biting midges were amoung the conspicuously troublesome pests during 1957.

Cereal and Forage Insects: GRASSHOPPERS again caused substantial crop and range losses in a number of counties, estimated at $280,000. Considerable control effort was put forth, resulting in a saving estimated at $148,000. Control was carried out in crop land largely by the farmers, ranchers, orchardists, and home gardeners. The most damaging grasshopper species were *Melanoplus bilituratus*, *M. bivittatus*, *M. femur-rubrum*, *M. borealis*, *Camnula pellucida*, *Aulocara elliotti* and *M. packardi*. Federal, State, County and rancher cooperative control programs, controlled grasshoppers with aerial treatments over an area of 39,000 acres in Box Elder County and 30,000 acres in Sanpete-Sevier area. MORMON CRICKET (*Anabrus simplex*) was aircraft baited and controlled over 18,500 acres of rangelands in Daggett County and 5,000 acres in San Juan County in time to prevent economic losses. The spotted alfalfa aphid (*Therioaphis maculata*) caused spotted damage to alfalfa crops over the southern one-half of the state. Estimated loss of alfalfa hay, seed, and new plantings was estimated at $165,000, as compared with $780,000 during 1955 and $500,000 in 1956. Less area in State was damaged than during the previous two years. However, the aphid moved northward into Tooele, Salt Lake and Utah Counties. The PEA APHID (*Macrosiphum pisi*) caused substantial losses of forage alfalfa hay and reduced seed production in several seed areas. Populations were low in late spring. However, many outbreaks developed in early summer and continued until late fall, where alfalfa was succulent. Damage to canning peas was very light except for some Cache County acreage. LYGUS BUGS (largely *Lygus elisus*, *L. hesperus*, and *L. desertus*) were very abundant on alfalfa in most areas, resulting in losses where seed crop control was delayed or omitted. SUPERB PLANT BUG (*Adelphocoris superbus*) again was above normal in numbers over several counties, in alfalfa. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) has now spread to practically all parts of Utah, except Daggett County. Damage was much less conspicuous than during 1954 and 1955. ALFALFA WEEVIL (*Hypera postica*) caused severe damage to much untreated alfalfa acreage. Losses are estimated to exceed $200,000. THE ALFALFA CATERPILLAR (*Colias philodice eurytheme*) caused local crop injury in a few counties. A TORTRICID (*Tortrix pallorama*) caused scattered alfalfa seed crop injury, usually light. ARMY CUTWORM (*Chorizagrotis auxiliaris*) damaged alfalfa in spring over several thousand acres, largely in southern and central Utah. Spotted damage to small grains and range forage also occurred. WESTERN YELLOW-STRIPED ARMYWORM (*Prodenia praefica*) damaged alfalfa, tomatoes, and truck crops, particularly in Cache, Box Elder, Weber, and Davis Counties. This crop damage was estimated at $92,000. Damage by *Prodenia* sp. occurred in many areas of southern and central Utah; the Millard County alfalfa seed crop suffering most severely due to repeated attacks and reduced seed yields.

BROWN WHEAT MITE (Petrobia latens) was less damaging, particularly after spring rains occurred. Early spring control was necessary in Washington County. Some damage occurred in northern counties. CORN LEAF APHID (Rhopalosiphum maidis) caused conspicuous damage to spring barley in several northern and central counties. Injury to corn was light. AN APHID (Hyalopteroides dactylidis) damaged orchard grass locally. The ENGLISH GRAIN APHID (Macrosiphum granarium) caused light damage to small grains. The SWEETCLOVER APHID (Myzocallidium riehmi) was common, but not economic. MIRIDS (largely Stenotus binotatus and Leptopterna ferrugatus) damaged grasses and small grains in local areas. SAY STINK BUG (Chlorochroa sayi) caused local injury to small grains and alfalfa seed crops. CORN EARWORM (Heliothis zea) caused extensive damage to sweet corn and moderate injury to field corn throughout Utah. Infestations varied from 40 to 100 percent where no control was applied. Local injury occurred from wheat straw-worm, false chinch bugs, wireworms, false wireworms, corn sap beetles, thrips and flea beetles in scattered localities. Corn was damaged by the TWO-SPOTTED SPIDER MITE (Tetranychus telarius) in a number of localities. WESTERN HARVESTER ANT (Pogonomyrmex occidentalis) caused usual damage. Several thousand acres of range and forage crop lands kept bare of vegetation. CLOVER SEED CHALCID (Bruchophagus gibbus) caused about normal economic damage but considerably less than in 1956.

Fruit Insects: APHID infestations generally were below normal other than woolly WOOLLY APPLE APHID (Eriosoma lanigerum), A LEAF-CURL PLUM APHID (Anuraphis helichrysi) which were damaging in many localities. CODLING MOTH (Carpocapsa pomonella) infestations in well sprayed orchards sometimes exceeded five percent; unsprayed or poorly sprayed orchards often were 100 percent "wormy". Numerous unsprayed home orchards had very high "worm" counts. Cherry fruits at Orem were infested by C. pomonella. SPIDER MITES were generally severe in orchards and on some berry crops, although developing later in the season than normal. Bryobia praetiosa was generally present in orchards and severe where poor or no delayed dormant spray was applied. Eotetranychus willamettei was present in a number of localities, especially on apples. Damage occurred from Provo southward and in some Cache Valley orchards Tetranychus mcdanieli was highly injurious in many apple and sour cherry orchards in Weber and Box Elder Counties. Tetranychus canadensis infested a few orchards. PEAR LEAF BLISTER MITE (Eriophyes pyri) and the PEACH SILVER MITE (Vasates cornutus) were occasionally damaging. A CHERRY RUST MITE was highly injurious in Utah County. Mite injury, in general, was about average in orchards. LEAFHOPPERS varied from scarce to numerous on apple, plum and prune. A GEMINATE LEAFHOPPER (Colladonus geminatus) again was usually low in numbers in alfalfa fields and orchards. SAN JOSE SCALE (Aspidiotus perniciosus) was occasionally damaging. PEAR-SLUG (Caliroa cerasi) caused moderate damage to cherry, pear and plum foliage; seriously damaged hawthorn foliage in several areas. CALIFORNIA PRIONUS (Prionus californicus) damaged some fruit trees in Salt Lake County. Infestations in Davis, Weber and Utah Counties also noted. CATFACING INSECTS caused moderate damage, even though many fruit crops were light due to spring frosts. PEACH TREE BORER (Sanninoidea exitiosa) and WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi) caused general damage to stone fruits throughout the State. PEACH TWIG BORER (Anarsia lineatella) frequently caused damage to fruits and twigs. PEAR THRIPS (Taeniothrips inconsequens) were moderately numerous. CHERRY FRUITWORM (Grapholita packardi) was rare in cherries this season. CLIMBING CUTWORMS damaged orchards in Box Elder and Weber Counties, with scattered local damage elsewhere. SHOT HOLE BORER (Scolytus rugulosus) caused local damage, especially in weakened cherry, apricot and peach trees. Bud damage to 35 young cherry trees was severe in one Orem orchard. WALNUT HUSK FLY (Rhagoletis completa) again caused serious damage to the English walnut crop at Ogden. WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) again was almost completely controlled by insect parasites and predators. GRAPE BERRY MOTH (Paralobesia viteana) damaged grapes in a few Washington County vineyards. CURRANT APHIDS of several species were about normally damaging, with some injury to red currants and gooseberries. CURRANT FRUIT FLY (Epochra canadensis) caused average, general damage. MAGGOTS again produced galls in chokecherry fruits in Logan, Ogden and Bountiful Canyons.

RASPBERRY CANE GIRDLERS and RASPBERRY ROOT BORERS damaged a number of raspberry patches in Box Elder, Salt Lake, Utah and Davis Counties. STRAWBERRY LEAFROLLER (Ancylis comptana fragariae) caused above-normal injury in northern and central Utah. STRAWBERRY CROWN MOTH (Ramosia bibionipennis) larvae killed new raspberry plants at Willard and damaged dewberry canes at Providence. ROOT WEEVILS (Brachyrhinus ovatus, B. rugosostriatus and sometimes B. sulcatus) damaged untreated strawberry patches quite commonly with moderate injury to roots of raspberry and other cane fruits.

Truck Crop Insects: TOMATO FRUITWORM (Heliothis zea) population was moderate on early fruit settings but low on the principal canning crop. Some damage to garden tomatoes occurred in southern areas. A "Statement of Outlook" of August 8, to canners and canning crop growers indicated that the tomato fruitworm infestation would be light and insecticide applications probably not warranted. CORN EARWORM (Heliothis zea) was serious, so canning corn growers were warned that an increase in corn earworm infestations was expected by mid-August. It was indicated that insecticide applications would be warranted, particularly in Utah County. Approximately 30 percent of the northern Utah canning corn acreage was treated, largely in Utah County, where one canning company applied insecticides to about 600 acres of canning corn. Control started in early August and continued into early September. The infestation was the highest since 1952. Some areas were 100 percent infested when not controlled. TOMATO RUSSET MITE (Vasates lycopersici) infested at least 200 acres of canning tomatoes in northern area. This was the most severe and extensive outbreak to develop for approximately 10 years. LYGUS BUGS (Lygus elisus predominantly) on sugar beet seed in southern Utah in spring of 1957 were moderate. Lygus bugs were controlled on beets and on a number of adjacent alfalfa fields in conjunction with insecticide applications for spotted alfalfa aphid control. In northern Utah, lygus populations were moderate on sugar beets for seed crops in early June at Avon and Paradise. All sugar beets in southern area were treated for protection. Spring and summer populations of BEET LEAFHOPPER (Circulifer tenellus) were light to very light on sugar beets and tomatoes. Curly-top damage was well below normal. However, fall populations in Washington County on beets being grown for seed were about one-third higher than the corresponding 1956 populations.

Populations of a VINEGAR FLY (Drosophila melanogaster) in tomato fields were higher than 1956, until mid-September. Heaviest populations originated in orchards having substantial fruit drop. APHIDS were about normal on vegetable crops with populations in some areas becoming high on potatoes, beans, peas, carrots, celery and cabbage. A heavy buildup of aphids occurred in the Beryl-Enterprise potato area requiring one to two late season control applications. In some areas, potatoes intended for seed certification could not be certified due to aphid-borne disease. SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons), and a LEAFHOPPER (Empoasca filamenta) caused occasional damage in local areas; generally below normal in numbers. A BLACK FLEA BEETLE again damaged sweet corn throughout the season in Washington County. FLEA BEETLE damage generally was moderate to normal in gardens, although an occasional potato and sugar beet field suffered severely. MELON APHID (Aphis gossypii) damage to cucumbers, squash, and cantaloups was normal, sometimes serious. SAP BEETLES caused local injury to sweet corn in many communities, largely in home gardens. Damage was greatest in southern and central Utah. SQUASH BUG (Anasa tristis) caused normal injury over most of State, being most severe in Washington County. SEED-CORN MAGGOT (Hylemya cilicrura) injury severe in Washington County. ONION MAGGOT (Hylemya antiqua) injury was common. CORN LEAF APHID (Rhopalosiphum maidis) damage was light on corn. TWO-SPOTTED SPIDER MITE damage sometimes was severe on canning and home garden sweet corn as well as on field corn. POTATO TUBERWORM (Gnorimoschema operculella) again appeared in Washington and Iron Counties. The infestation in Iron and Washington Counties was much lower than in 1956. COLORADO POTATO BEETLE (Leptinotarsa decemlineata) damaged potatoes locally at Kanab and in parts of Weber and northern Davis Counties. MEXICAN BEAN BETTLE (Epilachna varivestis) caused damage in a number of counties. This pest has spread moderately during recent years.

ASPARAGUS BEETLE (*Crioceris asparagi*) and the SPOTTED ASPARAGUS BEETLE (*C. duodecimpunctata*) caused near normal damage in several counties. ONION THRIPS (*Thrips tabaci*) injury to onions was common but average. Often present on other plants. CUTWORM damage was common in spring but lower during mid and late summer. WESTERN YELLOW-STRIPED ARMYWORM caused some damage to tomatoes, beets, and home gardens in a number of northern localities, usually when larvae migrated from alfalfa fields. HORNWORMS (*Protoparce* spp.) caused spotted, sometimes conspicuous damage to tomatoes and potatoes. GARDEN CENTIPEDE attacked home gardens and occasionally commercial crops in scattered localities.

Shade Tree Insects: APHIDS on shade trees were unusally troublesome during spring and early summer of 1957. A COTTONWOOD BLOTCH LEAF MINER (*Paraleucoptera albella*) again was damaging in the Sevier-Piute County area, principally along the Sevier River. Leaf miners severely infested aspen foliage in a number of mountain areas, while poplar and cottonwood leaf miners were noted in scattered communities over the State. BOXELDER APHID (*Periphyllus negundinis*), WOOLLY ELM APHID (*Eriosoma americanum*), NORWAY-MAPLE APHID (*Periphyllus lyropictus*), A LEAF-CURL ASH APHID (*Prociphilus fraxinifolii*), and several other aphids caused above normal damage to shade trees. Willows often were severely infested with flowering hawthorn foliage sometimes severely curled. Ant, fly, and wasp annoyance often accompanied serious shade tree aphid infestations about homes. GREAT BASIN TENT CATERPILLAR (*Malacosoma fragilis*) caused injury in Washington, Kane and San Juan Counties. FOREST TENT CATERPILLAR (*Malacosoma disstria*) was damaging to northern Utah shade trees and shrubs, to poplars and to other susceptible trees and shrubs. LEAFHOPPER injury to elms was below normal. BOXELDER PSYLLID (*Psylla negundinis*) caused spotted damage in Cache, Utah, Carbon and other counties. A SPIDER MITE (*Eotetranychus weldoni*) caused local injury to weeping willow foliage in some localities, although generally less than in 1956. LEAFHOPPERS (*Erythroneura ziczac*, *E. elegans* and spp.) again damaged Virginia creeper foliage during late summer and fall. Leaves frequently were brown and dry before late August. ROSE LEAFHOPPER (*Edwardsiana rosae*) commonly discolored foliage of cultivated roses when nor controlled. Numerous on spirea in fall. SPIREA APHID (*Aphis spiraecola*), POTATO APHID (*Macrosiphum solanifolli*), and other aphid species injured ornamentals during the season. A ROSE SNOUT BEETLE and THRIPS also caused damage to roses. EUROPEAN EARWIG (*Forficula auricularia*) caused widespread annoyance about homes and gardens over most of State.WHITE GRUBS damaged numerous lawns in several counties and occasionally damaged small shrubs and garden flowers.

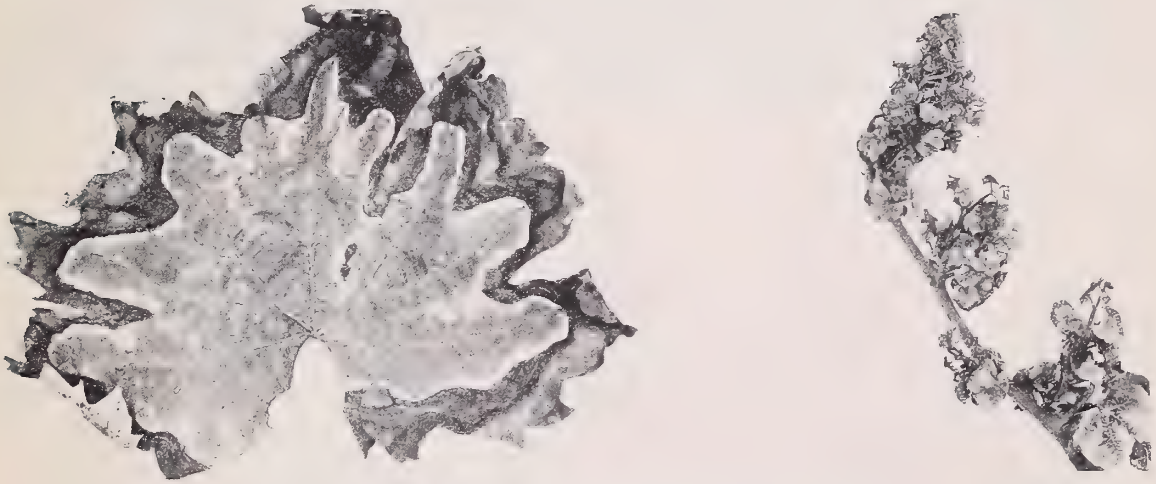
Insects Affecting Livestock: CATTLE LICE caused extensive but normal damage generally over the state, with some herds being severely infested. CATTLE GRUBS (*Hypoderma lineatum* and *H. bovis*) caused substantial but normal damage as grubs and as adult flies. HORN FLY (*Siphona irritans*), STABLE FLY (*Stomoxys calcitrans*), HORSE FLIES, DEER FLIES, HOUSE FLIES, and BLOW FLIES caused common and about average annoyance to livestock. POULTRY MITES and LICE, and HOG LICE were fairly common, sometimes present in abundance. EAR TICK (*Otobius megnini*) caused some local damage, but was less troublesome than during 1953 or 1954. TICKS, particularly *Dermacentor andersoni*, were numerous during spring on cattle and horses, and attacked persons on range lands. A SARCOPHAGID (*Wohlfahrtia opaca*) larva sometimes attacked livestock, kit mink and other animals. A SNIPE FLY (*Symphoromyia hirta*) seriously annoyed man and cattle in a number of canyons. SHEEP KED (*Melanophagus ovinus*) was abundant and injurious generally, particularly in the winter to lambs. MAGGOTS caused some damage to sheep. BLACK FLIES were abundant and annoying, particularly in several canyons. HOUSE FLY (*Musca domestica*) was frequently numerous in cities, towns farms and in food establishments. CLUSTER FLY (*Pollenia rudis*) invaded many homes in fall. COCKROACHES infested many buildings.

BITING MIDGES were extremely troublesome in many localites for a 2 to 5 week period during summer. CLOVER MITE, EUROPEAN EARWIG and BOXELDER BUG commonly caused household annoyance. A CASE-MAKING MOTH (*Apterona crenulella*) infested outsides of several homes, as well as ornamentals and fruit trees about the homes. Chief damage was to range plants in Cache, Box Elder, Rich and Weber Counties. SUBTERRANEAN TERMITES damaged many homes and buildings in various parts of the state.

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

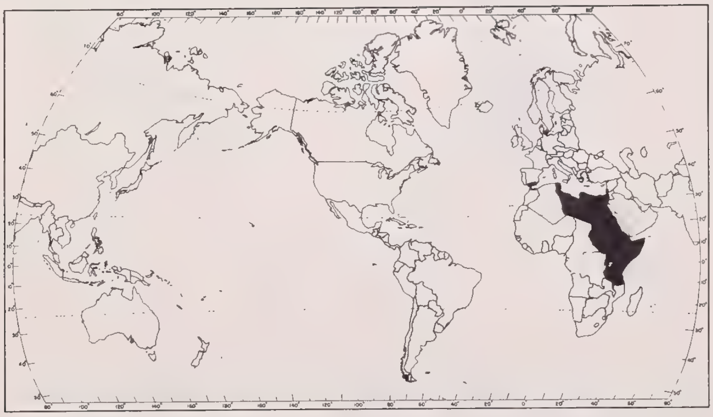
COTTON JASSID* (*Empoasca lybica* (Bergevin))

Economic Importance: This leafhopper is one of the most important pests on cotton in the Sudan where it caused as much as 25 percent loss of the crop yearly in areas of the Gezira Province prior to initiation of a control program in 1945. This program, which has involved up to 250,000 acres annually, resulted in an estimated saving of 225,000 bales (400 lbs. per bale) of lint cotton during the period 1945-54. In Israel, *E. lybica* is responsible for considerable injury to eggplant, tomato, pepper and potato. Damage to young eggplant is sometimes so severe that the plantings are abandoned. Serious injury has also been recorded on grapes, particularly in Spain. Feeding of the leafhopper produces "hopperburn" or discoloration, curling, and drying of the foliage. This leads to stunting and premature shedding of buds and fruit or death of plants.



Empoasca lybica Damage to Grape

Distribution: Wide range in Africa, from Mediterranean as far south as Tanganyika; also Israel and Spain.



General Distribution of Cotton Jassid

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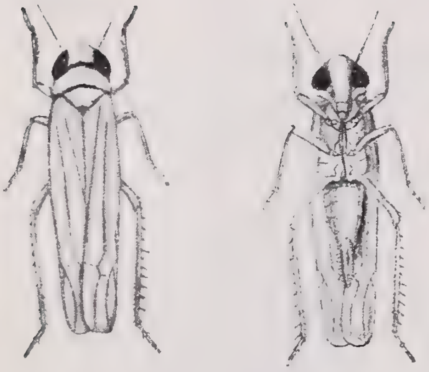
* Also called green leafhopper (Cicadellidae, Hemiptera)

No. 29 of Series

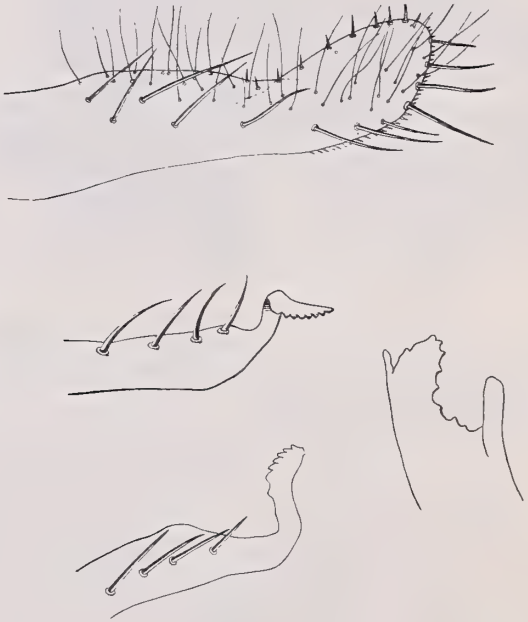
Hosts: Feeds on many plants; among more important are cotton, potato, tomato, eggplant, okra, grapes and beans.

Life History and Habits: Under conditions in Sudan, adults migrate to small cotton seedlings in August and populations reach peak by end of November then decrease. Beginning in January the insects are found on eggplant and then on other garden plants and weeds where they slowly breed until return to cotton in August. Eggs are deposited in leaf tissue, especially on underside along the main vein. Egg and nymphal periods last about 8 days each in summer but adults may live for as long as two months. There may be several generations a year, depending on climatical conditions; cold dry weather retards development.

Description: Adults - male 2.7 mm., female 3 mm. in length. Wings light green or golden yellow, one third longer than abdomen. Vertex regularly rounded at apex, ornamented with 3 inconspicuous whitish lines; pronotum unicolored transparent, greenish. Head and pronotum approximately equal in width. Scutellum with 2 semi-callose whitish lines, not very prominent. Body light green without black stripes or spots. Tarsal claws dark brown to black. Nymphs are whitish at first but soon become concolorous green or yellowish-green.(Prepared in Plant Pest Survey Section in cooperation with other ARS agencies.) CEIR 7 (45) 11-8-57



Adult



Genitalia

Empoasca lybica

Figures (except map): Adult and damage to grape from Ruiz Castro, A. 1950. Bol. de Patol. Vegetal y Ent. Agr. 17:111-162. Genitalia and damage to leaf from Ruiz Castro, A. 1944. Fauna Ent. de la Vid en Espana. II. (Hemiptera). 189 pp. Madrid.